

AMENDMENT TO THE CLAIMS

1. (Currently Amended) An electrolytic integrated polishing method for polishing the internal surface of the cylindrical portion of ~~a long sized cylindrical workpiece~~ an aluminum extrusion hollow shape by integrating elution by electrolyte and abrasion by a grindstone attached to a tool electrode inserted into an inside of the cylindrical portion, said method comprising the steps of disposing ~~a long sized cylindrical workpiece~~ the aluminum extrusion hollow shape so that ~~the~~ an axial center of its cylindrical portion is aligned with ~~the~~ a vertical direction, inserting ~~a~~ the tool electrode attached to ~~the~~ a tip of a rotation ~~axis~~ shaft supported downward similarly along the vertical direction into the cylindrical portion, and rotating as well as relatively moving the tool electrode along the vertical direction.

2-3. (Canceled)

4. (Currently Amended) An electrolytic integrated polishing apparatus for polishing the internal surface of the cylindrical portion of ~~a long sized cylindrical workpiece~~ an aluminum extrusion hollow shape by integrating elution by electrolyte and abrasion by a grindstone attached to a tool electrode inserted

into an inside of the cylindrical portion, said apparatus comprising a work supporting unit for disposing ~~a long sized cylindrical workpiece~~ the aluminum extrusion hollow shape so that ~~the~~ an axial center of ~~its~~ the cylindrical portion is aligned with ~~the~~ a vertical direction, a rotation ~~axis~~ shaft supported downward along the vertical direction and inserted into the inside of the cylindrical portion of said ~~long sized cylindrical workpiece~~ aluminum extrusion hollow shape, a tool electrode attached to ~~the top~~ a tip of the rotation ~~axis~~ shaft, and a transportation unit for moving said rotation ~~axis~~ shaft and/or the work supporting unit along the axial direction.

5. (Withdrawn) An electrolytic integrated polishing apparatus for polishing an internal surface of a cylindrical portion of a long sized cylindrical workpiece by integrating elution by electrolyte and abrasion by a grindstone attached to a tool electrode inserted into the cylindrical portion, said apparatus comprising a work supporting unit for disposing the long sized cylindrical workpiece so that the axial center of its cylindrical portion is aligned with the vertical direction, a rotation axis inserted into the cylindrical portion of said long sized cylindrical workpiece, a coaxial external tube supported downward

along the vertical direction to free-rotatably support said rotation axis and inserted together with said rotation axis into the cylindrical portion of said long sized cylindrical workpiece, a tool electrode attached to the tip of said rotation axis, and a transportation unit for moving said rotation axis and/or the work supporting unit along the axial direction.

6. (Withdrawn) The electrolytic integrated polishing apparatus for polishing the internal surface of the cylindrical portion of a long sized cylindrical workpiece according to claim 5, wherein a plastic tube, inside of which can be pressurized, is spirally wound around the peripheral of said external tube.

7. (Currently Amended) The electrolytic integrated polishing apparatus for polishing the internal surface of the cylindrical portion of ~~a long sized cylindrical workpiece~~ an aluminum extrusion hollow shape according to claim 4, wherein a free ring mechanism is disposed at and axially aligned with one or more of an upper and lower openings of the cylindrical portion of the aluminum extrusion hollow shape, said free ring mechanism has a sleeve and a free ring supported free-rotatably within the sleeve, and has having ~~having~~ approximately the same bore as a finished bore of

said cylindrical portion and has approximately the same length as
that of an elastic grindstone, and is rotatable freely and
synchronously by a pressing force of the elastic grindstone.~~is~~
~~free rotatably disposed to the upper and the lower positions of~~
~~the cylindrical portion of the long sized cylindrical workpiece.~~

8. (Withdrawn) The electrolytic integrated polishing apparatus for polishing the internal surface of the cylindrical portion of a long sized cylindrical workpiece according to claim 6, wherein a free ring, having approximately the same bore as the finished bore of said cylindrical portion, is free-rotatably disposed to the upper and the lower positions of the cylindrical portion of the long sized cylindrical workpiece, and a restricting sleeve with a predetermined length, having approximately the same bore as the bore of said free ring, is disposed further above the free ring disposed at the upper side.

9. (Currently Amended) The electrolytic integrated polishing apparatus for polishing the internal surface of the cylindrical portion of ~~a long sized cylindrical workpiece~~ an aluminum
extrusion hollow shape according to claim 4, ~~wherein further~~
comprising a hollow portion is provided inside the tool electrode,

and a ~~plastic pressure~~ tube, ~~inside of~~ which can be pressurized, ~~is provided~~ in said hollow portion.

10. (Currently Amended)—~~A long sized cylindrical workpiece~~ An aluminum extrusion hollow shape finished by the electrolyte integrated polishing method according to claim 1, with the wherein a length of a cylindrical portion thereof being ten times as large as a diameter thereof, or more, finished by the electrolyte integrated polishing to have and a roundness of an internal surface of the cylindrical portion equal to or smaller than 10 μm and a surface roughness R_{max} equal to or small than 1 μm .

11. (Withdrawn) The electrolytic integrated polishing apparatus for polishing the internal surface of the cylindrical portion of a long sized cylindrical workpiece according to claim 5, wherein a free ring, having approximately the same bore as a finished bore of said cylindrical portion, is free-rotatably disposed to the upper and the lower positions of the cylindrical portion of the long sized cylindrical workpiece.

12. (Withdrawn) The electrolytic integrated polishing apparatus for polishing the internal surface of the cylindrical

portion of a long sized cylindrical workpiece according to claim 6, wherein a free ring, having approximately the same bore as a finished bore of said cylindrical portion, is free-rotatably disposed to the upper and the lower positions of the cylindrical portion of the long sized cylindrical workpiece.

13. (Withdrawn) The electrolytic integrated polishing apparatus for polishing the internal surface of the cylindrical portion of a long sized cylindrical workpiece according to claim 5, wherein a hollow portion is provided inside the tool electrode, and a plastic tube, inside of which can be pressurized, is provided in said hollow portion.

14. (Withdrawn) The electrolytic integrated polishing apparatus for polishing the internal surface of the cylindrical portion of a long sized cylindrical workpiece according to claim 6, wherein a hollow portion is provided inside the tool electrode, and a plastic tube, inside of which can be pressurized, is provided in said hollow portion.

15. (Currently Amended) The apparatus for polishing the internal surface of the cylindrical portion of a long sized cylindrical

~~workpiece~~ an aluminum extrusion hollow shape according to claim 7, ~~wherein further comprising a hollow portion is provided~~ inside the tool electrode, and a ~~plastic pressure~~ tube, ~~inside of which~~ can be pressurized, ~~is provided~~ in said hollow portion.

16. (Withdrawn) The internal surface of the cylindrical portion of a long sized cylindrical workpiece according to claim 8, wherein a hollow portion is provided inside the tool electrode, and a plastic tube, inside of which can be pressurized, is provided in said hollow portion.

17. (New) An aluminum extrusion hollow shape finished by the electrolyte integrated polishing method according to claim 4, wherein a length of a cylindrical portion thereof being ten times as large as a diameter thereof, or more, and a roundness of an internal surface of the cylindrical portion equal to or smaller than 10 μm and a surface roughness R_{max} equal to or small than 1 μm .